

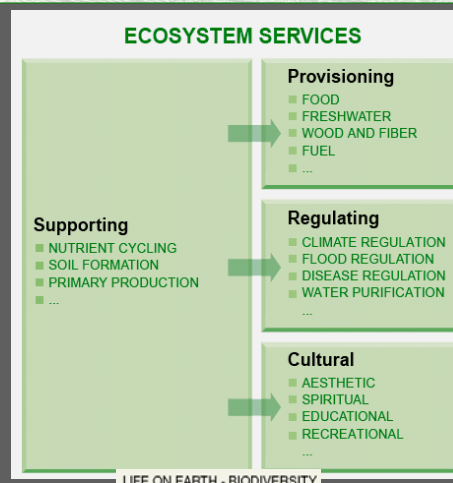
Seminar on People and Forests,
Hutan Dan Manusia, May 22, 2008, Jakarta

Payment for Ecosystem Services: Concepts and Applications

Bruno Locatelli, CIRAD-CIFOR



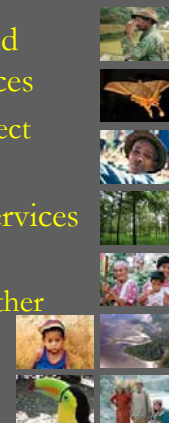
Ecosystem Services



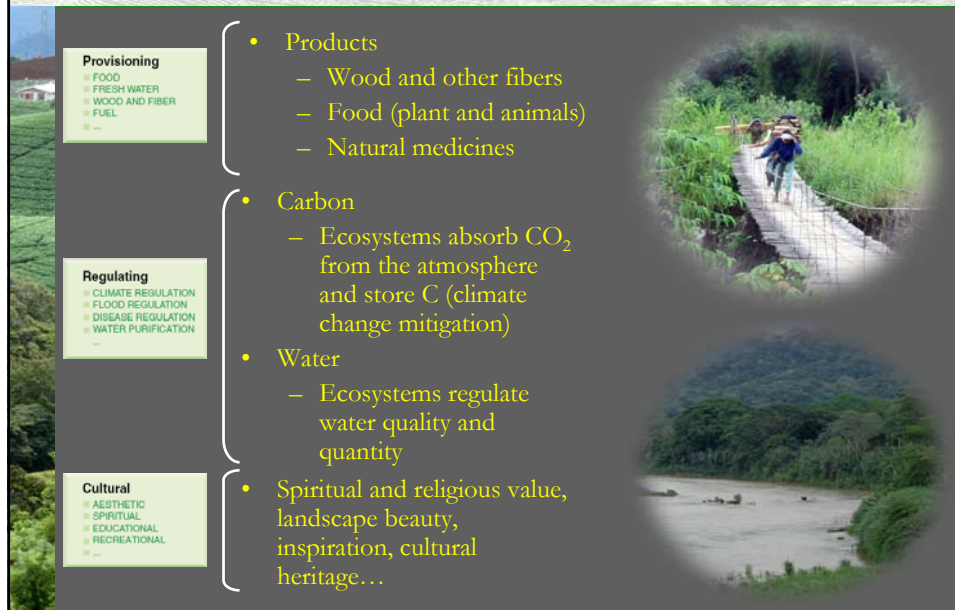
(Millennium
Ecosystem
Assessment, 2005)

- “The benefits people obtain from ecosystems”

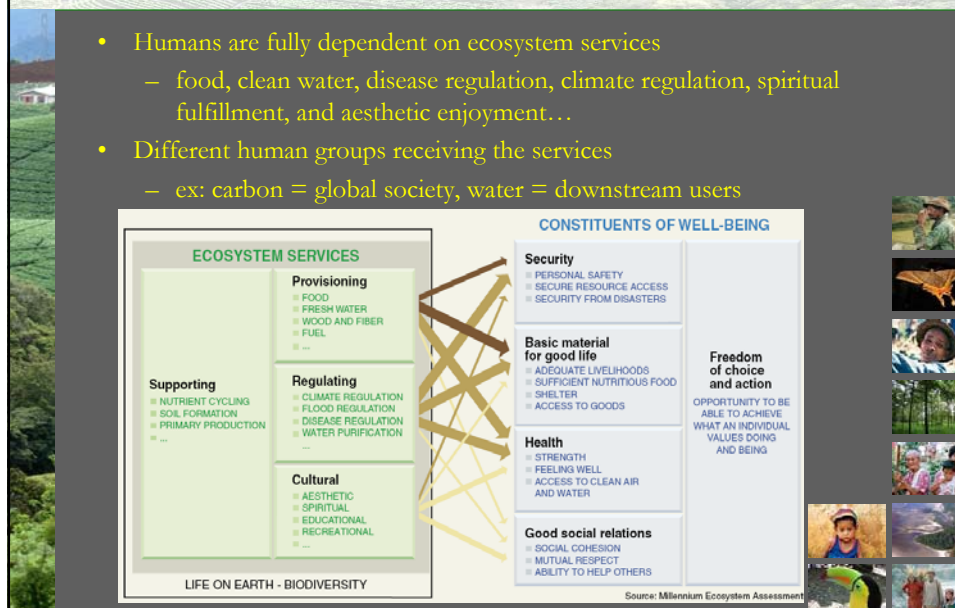
- provisioning, regulating, and cultural services
 - directly affect people
- supporting services
 - needed to maintain other services



Examples of Ecosystem Services



Why are Ecosystem Services Important?



The Value of Ecosystem Services

- A famous valuation exercise (Costanza et al., 1997):
 - Estimated of the current economic value of 17 ecosystem services for 16 biomes
 - It is not a market value
 - Most of the value is outside the market
 - Entire biosphere = US\$16–54 trillion (10^{12}) per year
 - Compared to global GNP (US\$18 trillion per year)

The value of the world's ecosystem services and natural capital

Robert Costanza^{*,†}, Ralph d'Arge[‡], Rudolf de Groot[§], Stephen Farber^{||}, Monica Grasso[†], Bruce Hannen[†], Karin Limburg[¶], Shahid Naeem^{**}, Robert V. O'Neill^{††}, Jose Paruelo^{‡‡}, Robert G. Raskin^{§§}, Paul Sutton^{||} & Marjan van den Belt^{††}

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Threats to Ecosystem Services

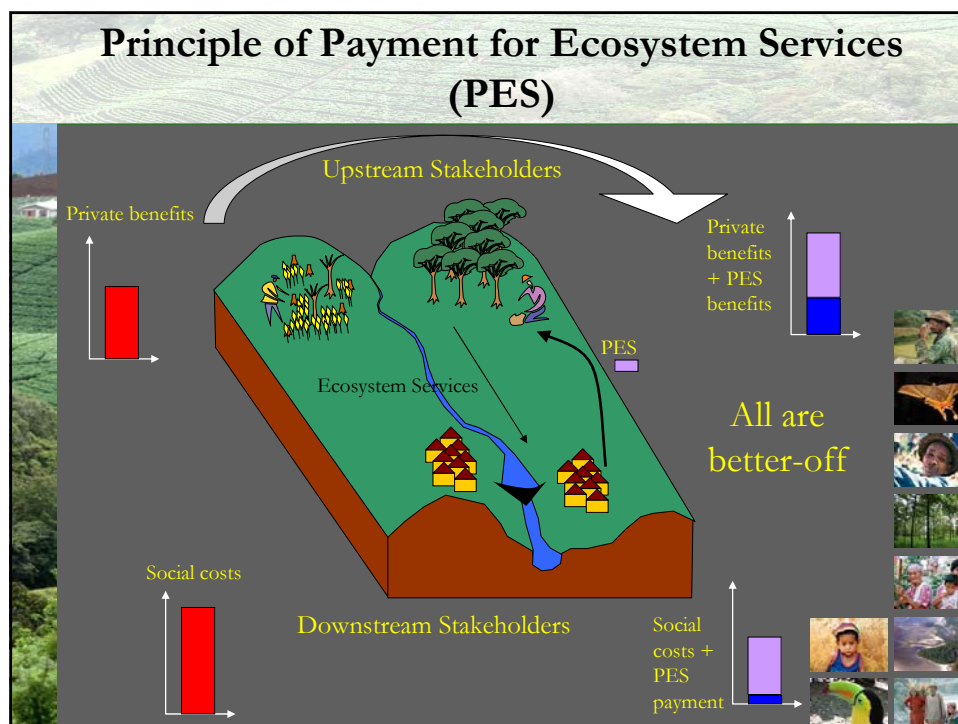
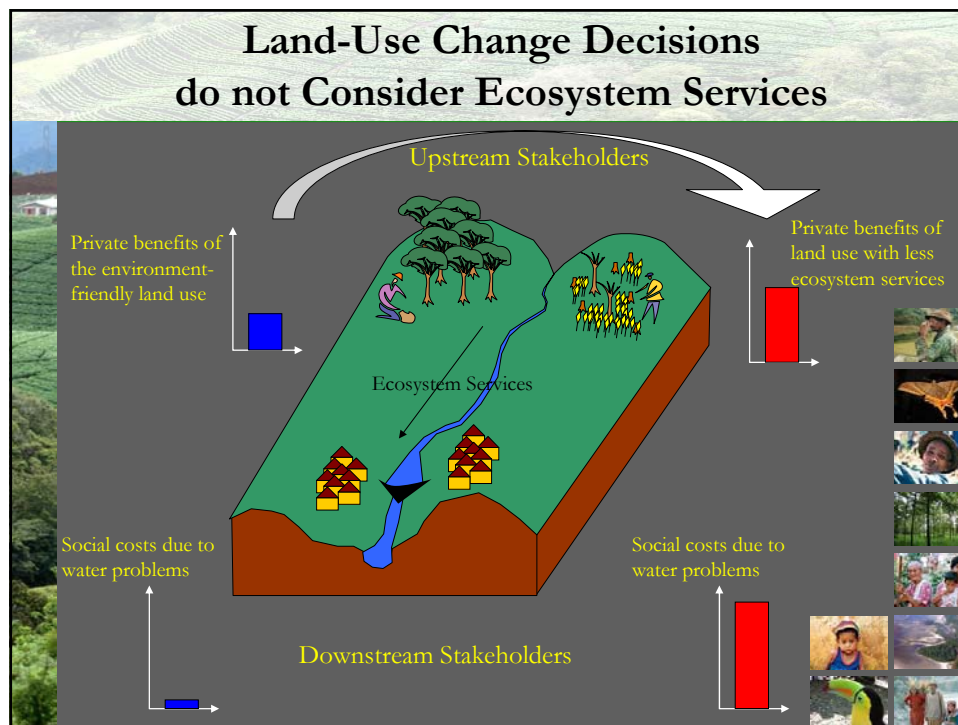
Examples of threats on 3 types of ecosystems over the past 50 years

		Habitat change	Climate change	Invasive species	Over-exploitation	Pollution (nitrogen, phosphorus)
Forest	Tropical	↑	↑	↑	↗	↑
Dryland	Tropical grassland and savanna	↗	↑	↑	→	↑
Coastal		↗	↑	↗	↗	↑

Habitat change and overexploitation are main drivers

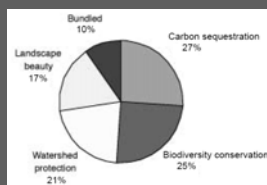
Driver's impact on biodiversity over the last century	Driver's current trends
Low	Decreasing impact
Moderate	Continuing impact
High	Increasing impact
Very high	Very rapid increase of the impact

Source: Millennium Ecosystem Assessment

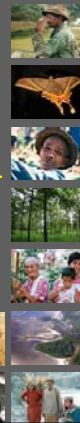


Examples of PES

- For carbon
 - Global mechanisms
 - CDM (Clean Development Mechanism)
 - Reductions of Emissions from Deforestation and Degradation (REDD)
 - Voluntary markets
- For water
 - Many local experiences
 - Colombia, Costa Rica, Ecuador, Honduras, Venezuela...



287 cases reported in
Landell-Mills & Porras (2002)



PES in Costa Rica

- PSA (“Pagos por Servicios Ambientales”) in Costa Rica
 - A national PES scheme
 - Since 1997
 - Payments to landowners for:
 - Forest plantation
 - Forest conservation
 - Forest management (until 2002)
 - Agroforestry (since 2002)
- Recognized ecosystem service
 - Watershed
 - Scenic beauty
 - Biodiversity
 - Carbon

Local

Global



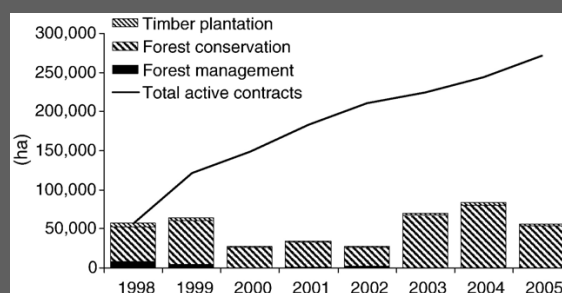
Buyers of Ecosystem Services: Who Pays?

- Carbon
 - Costa Ricans (tax on fossil fuels)
 - Norway
 - World Bank Carbon Fund (through a project)
- Biodiversity
 - GEF (Global Environment Facility)
- Water
 - Hydropower producers
 - Bottlers
 - Tourism
 - Irrigated areas
 - Municipal water supply
- Scenic beauty
 - Negotiations with hotels & rafting companies

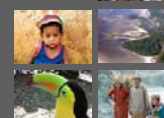


Sellers: Who Receives the PES?

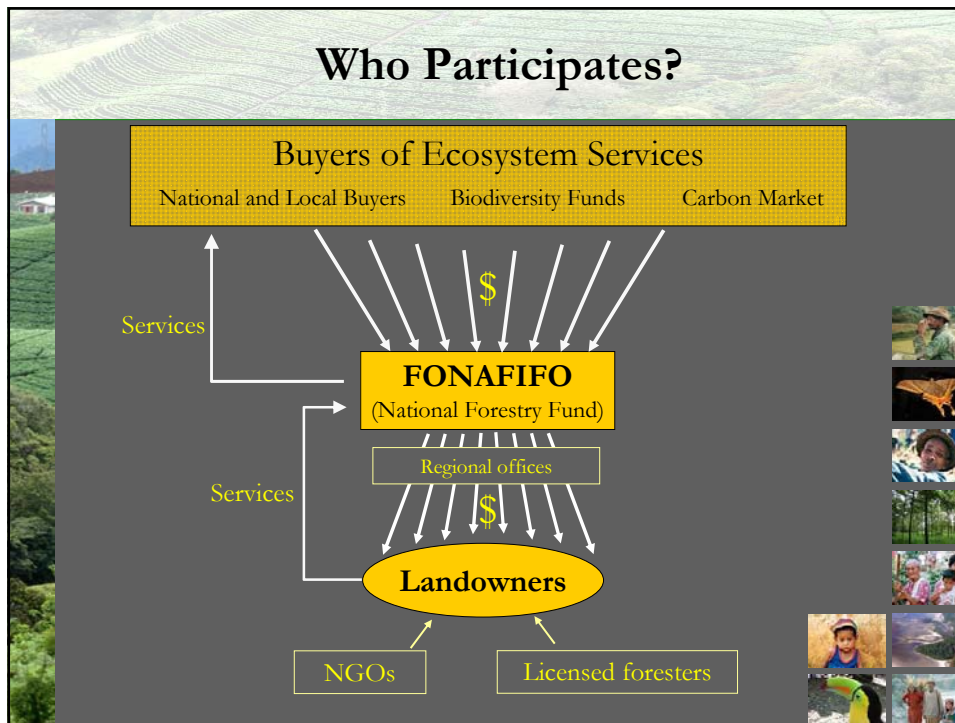
- PES is mostly paid to forest conservation
- Active contracts = 250,000 ha
 - almost 5% of the country
 - 9% in priority areas
- How much is paid?
 - Around 40 US\$/ha/yr for forest conservation
 - Around 820 US\$/ha for plantation
 - 370 US\$/ha during the first year,
 - 50 US\$/ha/yr during the 9 next years



(Pagiola, 2007)



Who Participates?



Impacts of PES in Costa Rica

- On forests
 - 10% of the forests are under PES (and many new applicants)
 - As forest law prohibits clearing, is there additional impact?
 - Controversies:
 - Forest cover in 2005 = 10% greater than it would have been without PSA (Tattenbach et al., 2006)
 - PSA = minimal impact on deforestation 1997–1999 (Pfaff et al., 2006)
- On people
 - Impact rather positive on landowners
 - Criticism: benefits tend to go to larger and relatively better-off landowners (Zbinden and Lee, 2005; Pagiola, 2007)

Conclusion

- A lot of interest for PES around the world
- Debates on:
 - Where or when PES are adequate instruments?
 - Land tenure, governance...
 - Can PES alleviate poverty?
 - Efficiency vs. equity...
 - How to implement PES?
 - Institutions, buyers/sellers, payment (cash, kind...)
- A lot of case studies and good reviews are available



Thank you!